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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,800	04/24/2001	Maximilian A. Biberger	SSI-02001	6810

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EXAMINER

EVERHART, CARIDAD

ART UNIT PAPER NUMBER

2825

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/841,800

Applicant(s)

BIBERGER ET AL.

Examiner

Caridad M. Everhart

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-30 and 41-46 is/are allowed.
- 6) ☒ Claim(s) 31-33, 35 and 40 is/are rejected.
- 7) ☒ Claim(s) 34 and 36-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's arguments with respect to claims 31-46 have been considered but are moot in view of the new ground(s) of rejection.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farmer, et al. ("Farmer")(US 2001/0029971A1) .

Farmer discloses an apparatus comprising a chamber for supercritical carbon dioxide processing (paragraph 007) in a cluster tool arrangement(paragraph 0011 and 0030). The apparatus operates in a system which is automated and has a robot system (paragraph 0032). There is also a transfer module(paragraph 0036 and 0045). Although Farmer is silent with respect to metal deposition, Farmer discloses that other steps in the process include material deposition(paragraph 0007). Because Farmer discloses automated processing cluster tool and material deposition, one of ordinary skill in the art would infer that this includes metal deposition, because metal deposition is a conventional process in the semiconductor processing. Because the process is automated and the apparatus is equipped with robots for transfer of the substrates, it would have been obvious to one of ordinary skill in the art to provide means for transferring the wafer between the modules, including the supercritical and the deposition modules.

Claims 31 32, 33, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paranjpe (US 5,494,526) in view of Starov(US 6,333,268B1)ⁿ cited in paper No. 7

Paranjpe discloses a load lock wafer handler(col. 2, lines 47-51) which is possible to evacuate(col. 2, lines 54-56). This is interpreted to be a transfer module coupled to the supercritical processing module. The gases are kept in the liquid phase in the processing module(col. 3, lines 57-65), which is interpreted to be that the processing module is a supercritical fluid module. Paranjpe further discloses that the load lock and wafer handler transfer the substrate wafer from the supercritical cleaning chamber to a variety of other processes(col. 5, lines 52-62). This is interpreted as means for transferring the substrate between the supercritical processing module and another module. That there is a wafer handler that transfers the wafers (col. 2, lines 48-57; col. 3) is interpreted as that there is a robot. There is a load lock(col. 2, lines 48-50). The pump evacuates the transfer chamber (col. 2, lines 52-57).

Paranjpe is silent with respect to a metal deposition module.

Starov discloses the cleaning of substrates which have contact openings which expose underlying metallization (Fig. 24b and Fig. 24c). Starov discloses carbon dioxide(col.7, lines 45-50) and chelating agent such as EDTA (col. 4, lines 7-10).

One of ordinary skill in the art would have been motivated to have combined the disclosure made by Paranjpe of the combination of the supercritical processing module with other process modules connected to the vacuum transfer module with the disclosure made by Starov of a supercritical processing module in a process for cleaning contact openings to underlying metallization because after the cleaning of the contact opening there would follow the deposition of conductor in the contact opening.

Allowable Subject Matter

cleaning contact openings to underlying metallization because after the cleaning of the contact opening there would follow the deposition of conductor in the contact opening.

Allowable Subject Matter

Claims 1-30 and 41-46 are allowed.

Claims 34, 36-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 703-308-3455. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 703-308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

8-7-03


CARIDAD EVERHART
PRIMARY EXAMINER